ENVIRONMENTAL ASSESSMENT

ENVIRONMENTAL QUALITY INCENTIVES PROGRAM

IRRIGATED CROPLAND OF HIDALGO COUNTY GEOGRAPHICAL PRIORITY AREA

INTRODUCTION:

This environmental assessment (EA) is being prepared by the United States Department of Agriculture Natural Resource Conservation Service (NRCS) to comply with the requirements of the National Environmental Policy Act of 1969 and implementing regulations at 40 CFR Parts 1500-1508. The EA will assist NRCS in determining whether the proposed action will have a significant impact on the quality of human environment and, therefore, requires preparation of an Environmental Impact Statement.

NEED FOR PROPOSED ACTION:

Purpose and Need for Action: There is a need in the Hidalgo EQIP Geographic Priority Area (GPA) to improve irrigation water use efficiency. The purpose of meeting this need is to keep irrigated crop production a viable alternative for agriculture producers by managing the existing water supply more wisely and economically by addressing water quantity as the primary concern. Secondary concerns would be the reduction of soil loss from wind erosion, improved water quality downstream, and improved air quality in the surrounding community.

Background: All irrigated land in Hidalgo County is contained either, within the Virden Valley with irrigation water delivered from the Sunset Canal and New Model Canal or underground wells, or, in closed underground water basins. The Virden Valley stretches along the Gila River in northern Hidalgo County. The areas with a closed underground water basin are located in the Animas Valley or the Southwest Closed Basin of Playas Lake in the central to southern portions of the county. There are a total of 43,000 acres of irrigatable cropland. Irrigation is delivered to the fields from wells and applied by sprinkler irrigation equipment or the irrigation canals off the Gila River with a system of ditches to fields that are flood-irrigated.

All land is located in a semi-desert region, with the basins formed as broad upland plains between mountain ranges, on nearly level to gently sloping soils. Elevation ranges from 4000 to 5000 feet and the annual precipitation averages from 8 to 12 inches. The mean average temperature ranges from 41 degrees to 80 degrees Fahrenheit. Land that pertains to this GPA will be irrigated cropland or pastureland. All other land is rangeland. Crop rotations often include limited residue crops such as chile, onions, cotton, and other vegetables. These crops in rotation create the potential for increased wind erosion during critical periods of the year. The resulting soil loss impairs air quality, decreases soil fertility, and contributes to sedimentation in surrounding waters.

The traditional irrigation systems in Hidalgo County allow for high evaporation and low water use efficiencies. The low efficiencies result from excess water being applied to fields, uneven applications, and adequate water not being applied in a timely manner. Irrigation water use efficiencies currently average between 40 to 50 percent. With water being limited in this semi-desert area, low efficiencies create problems of water shortage, potential habitat damage for fish species along the Gila River, downstream pollution from sediment and nutrient loading, and an increased economic struggle for agricultural producers in Hidalgo County. As irrigation costs increase and soil organic matter and fertility are reduced, the number of acres in production decrease and the potential for increased soil erosion from wind on fallow and idle land increases. The variability of slope and soil intake rates are other conditions affecting efficiency.

ALTERNATIVES:

Alternative 1: No Action

Alternative 2: Proposed Action:

Use NRCS Environmental Quality Incentives Program (EQIP) authorities to assist farmers in the Hidalgo County GPA to apply farm conservation systems. These systems include LEPA sprinkler systems, subsurface drip irrigation systems, irrigation water conveyance improvement, land leveling, conservation tillage and crop rotation, conservation buffer zones, irrigation water management (IWM) techniques, and nutrient and pest management techniques.

ALTERNATIVES CONSIDERED BUT NOT STUDIED IN DETAIL:

The only other alternative was to use NRCS EQIP authorities to assist farmers in the Hidalgo County GPA to apply farm conservation systems involving lining ditches with concrete or installing irrigation pipeline, leveling land to optimize flood irrigation flows, and use of IWM techniques but does not include the advanced technology of LEPA sprinkler and subsurface drip irrigation systems or the management of nutrients and pests. Under this alternative, NRCS would use EQIP authorities to install farm conservation measures including lining ditches with concrete or installing irrigation pipeline, leveling land, and using irrigation water management techniques on undetermined number of acres but fewer than 5,000.

This alternative does not adequately address the need to reduce irrigation water losses and low application efficiencies in a semi-desert environment and treats too few acres. Also, this alternative does not address loss of soil organic matter and fertility or the management of nutrients and pests. Therefore, this alternative will not be considered further.

SCOPING OF ISSUES FOR UNIQUE AND PROTECTED RESOURCES IN THE AREA:

NRCS conducted a review of the area to identify unique and protected resources and other special issues of concern. Members of the public had an opportunity to provide comments and identify concerns during a meeting on May 3, 2001 of the Hidalgo Soil and Water Conservation District and Local Work Group (LWG) responsible for recommending proposed EQIP actions. No controversy about the need for action or the actions themselves was raised during this meeting, and no resources or issues of concern were identified during the meeting or by the NRCS or other Federal, State and Tribal agencies but those discussed in this EA.

Threatened and Endangered Species and Species of Concern:

A record search of the New Mexico Game and Fish Department's Biota Information System of New Mexico (BISON) (6)(7) lists for Hidalgo County and USFWS's database was conducted. The spikedace minnow is listed on the threatened list and is native to the Gila River. Although the spikedace is normally absent from the Gila River downstream from Redrock, where the river periodically goes dry, it reinvades this portion during periods of extended runoff. Water shortages from drought and improper irrigation are making its survival in the river increasingly difficult.

Given an adequate water supply in the system, there is thought to be enough to sustain existing irrigation needs and fish habitat. If additional water is made available through actions of the proposed alternative, this could have a beneficial effect on the threatened spikedace. NRCS does not have control of the allocations of water through the irrigation system. Any water saved indirectly from proposed actions would be available for other uses as determined by the irrigation company. As a result, the U.S. Fish and Wildlife Service (FWS) will be consulted on a case by case basis if it is determined, by NRCS, that actions proposed as part of individual contracts may affect endangered species and species of concern.

The southwestern willow flycatcher is listed on the endangered list and has a breeding range that extends along the portions of the Gila River in New Mexico as well as other streams and rivers in Arizona and California. The flycatcher breeds principally in dense willow, cottonwood, and tamarisk thickets and woodlands along streams and rivers. Habitat loss (conversion or destruction of native riparian habitats) along with nest predation and brown-headed cowbird parasitism has reduced populations extensively.

Protection of existing willow-cottonwood thickets and restoration where such habitats have already been destroyed along rivers and streams would aid in supporting this endangered species. Critical habitat has been designated and includes the Gila River downstream to confluence of Steeple Rock Canyon near the Arizona state line.

Two other species listed are the loach minnow and the Chiricahua leopard frog. Since this program does not plan or assist with any practices in the waters of the Gila river or

on any wetlands, these species will not be affected by any practice. We will look for the leopard frog in areas that are exempted, such as leaky ditches or pipelines, during planning of private irrigation systems and management practices on cropland and before any construction begins. If frogs are found, we will consult with FWS prior to implementation.

The county list of Threatened and Endangered Species lists several other species, but NRCS has determined that none of these will be affected by any alternative or action considered in this EA.

Cultural Resources and Historic Properties:

The NRCS Cultural Resource Specialist has conducted a record search for all areas considered for treatment within the GPA. The result of the search was that there are over one hundred cultural resource sites recorded within the GPA, but the area has potential for many more. Therefore, all practices, that are considered to be undertakings under the programmatic agreement between the New Mexico State Historic Preservation Officer (SHPO) and NRCS, will be surveyed for cultural resources prior to installation of practices which utilize funds through EQIP. This will include a site specific records check as well as on-site cultural resource survey and Section 106 consultation with SHPO.

Wetlands:

The alternatives listed will not affect any natural wetlands. Irrigation induced wetlands may exist within the GPA and may be affected by actions within the proposed alternative. These artificial wetlands are exempt from the Food Security Act requirements. Food Security Act requirements will be followed if natural wetlands are encountered.

IMPACTS AND EFFECTS OF ALTERNATIVES:

Alternative 1. No Action

Landowners and other agencies will apply some farm conservation measures which may include concrete-lined ditches, land leveling to optimize flood irrigation flows, use of irrigation water management techniques, nutrient management, and pest management to an undeterminable number of acres annually without NRCS participation or assistance. Limited water supplies will continue and shortages will continue to be a threat. On-farm irrigation efficiencies will continue to average between 30 and 50 percent with excessive amounts of water being used for growing crops. Groundwater and surface water quality will improve only slightly. Conflict over water supply and potential effects on endangered species will continue to escalate with diminishing water supplies in the river. With economic feasibility declining in areas of the GPA where the cost to produce agricultural products continues to rise with inefficient systems, fields may be left fallow or idle and subject to increased wind erosion and result in a more negative impact on air quality and sedimentation.

Alternative 2. Proposed Action

There are 43,000 acres of irrigatable farms in the area with the potential to benefit from the application of conservation systems that include LEPA sprinklers, subsurface drip irrigation, land leveling, concrete-lined ditches, irrigation pipeline, conservation crop rotation, conservation tillage, buffer zones, nutrient and pest management, and irrigation water management techniques. NRCS expects to treat only about 28% of this acreage (12,000 acres) with conservation systems funded by EQIP under this alternative because of limited EQIP funding available (Maximum of $200,000 per year). It is estimated that only 5% (2150 acres) of the total irrigated acreage have already had highly efficient irrigation systems installed.

Consumptive use of water by crops in the GPA averages 24.5 inches/acre/year using LEPA or trickle irrigation systems. The efficiencies of these systems are expected to be about 85%. These systems will be emphasized in the GPA program.

Irrigation systems to be designed and installed require the application of various combinations of individual practices to achieve the desired result of irrigation water conservation. Specific components of these proposed systems will have the following effects. Components 1 through 7 will directly impact the primary resource concern of water quantity. Components 8 through 15 will impact the secondary resource concerns of soil erosion by wind, water quality, air quality and condition, soil condition (carbon sequestration), plant health, and wildlife habitat:

1. Irrigation Pipeline: A pipeline and appurtenances installed in an irrigation system. This will be installed by excavating a trench that will average 24 to 36 inches wide and 30 to 54 inches deep, installing the pipe and refilling the trench back to approximately the original grade. Approximately .25 of an acre will be disturbed per 1000 feet of pipeline. It is estimated that as many as 20,000 linear feet of pipeline could be installed.
Short Term Effects: The only effects expected are an increase in dust and noise generated during installation.
Long Term Effects: Water usage and loss will be reduced due to decreased seepage and evaporation losses.

2. Concrete Ditch Lining: This is a fixed lining of impervious material installed in an existing or newly constructed irrigation field ditch, irrigation canal, or lateral. This will be installed by lining an open ditch with concrete supported by earthen berms to deliver irrigation water to the fields. The dirt for the earthen berms will come from existing berm and adjacent field being irrigated. It is estimated that as much as 15,000 linear feet could be installed.
Short Term Effects: The only effects expected are an increase in dust and noise generated during installation.
Long Term Effects: Water usage will be reduced due to decreased seepage losses. Irrigation water delivery rates of flow will increase thereby allowing scheduled

applications to be applied in a more timely manner and reduce exposure to evaporation or excess soil infiltration or runoff.

3. Irrigation Land Leveling: This involves reshaping the surface of the land to be irrigated to a planned grade. The land will be leveled to a grade that will allow the most efficient application of irrigation water within practical economic and physical limits. It is estimated that as many as 5,000 acres of cropland could be leveled.
Short Term Effects: Effects expected are an increase in dust and noise generated during practice application, reduced soil productivity due to exposure of subsoil, and compaction due to repeated traffic needed to install the practice.
Long Term Effects: Irrigation efficiencies will be improved by up to 30 percent, which correlates directly to the amount of water saved as a result. Crop productivity will increase due to more uniform application of irrigation water.

4. Surface and Subsurface Irrigation Systems: A planned irrigation system in which all necessary water control structures have been installed for the efficient distribution of irrigation water by surface means such as furrows, borders, contour levees, contour ditches, or by subsurface means, or open ditches. The efficiency of water application is directly related to how the field has been leveled. Short and long term effects of leveling have been noted above.
Short Term Effects: Not significant
Long Term Effects: As components of the system are improved, the efficiency of the system will improve and will have a positive effect on the rate of change in the water table.

5. Trickle Irrigation Systems: A planned irrigation system in which all necessary water control structures are installed for efficiently applying water directly to the root zone of plants by means of applicators (orifices, emitters, porous tubing, perforated pipe operated under low pressure. The applicators can be place on or below the surface of the ground. Water is supplied to the tape or tubing through a system of pipelines and valves. It is estimated that as many as 10-15 systems could be installed.
Short Term Effects: These are basically the same as those noted above for irrigation pipelines. Other short-term effects are the cost of installation, which is equal to or exceeds the cost of the land, and the need to adapt to a cultural change in farming practices.
Long Term Effects: Irrigation efficiencies will be improved by up to 75 percent, which correlates directly to the amount of water saved as a result. Additional long-term effects include increased crop productivity, improved soil quality, reduced nutrient and pesticide application, reduced energy requirements, and reduced labor.

6. LEPA Sprinkler Irrigation Systems: These systems apply water through an irrigation pipeline to a self moving linear or circular system that applies water at or near the soil surface through drag socks on the soil surface or bubblers with heights of 8 to 18 inches above the soil surface. It is estimated that only 4 to 5 systems will be installed.
Short Term Effects: These are basically the same as those noted above for irrigation pipelines. Other short-term effects are the cost of installation, which is equal to or

exceeds the cost of the land, and the need to adapt to a cultural change in farming practices.
Long Term Effects: Irrigation efficiencies will be improved by up to 45 percent, which correlates directly to the amount of water saved as a result. Additional long-term effects include reduced nutrient and pesticide application, and reduced energy requirements.

7. Irrigation Water Management: This involves determining and controlling the rate, amount, and timing of irrigation water application in a planned and efficient manner. It is estimated that improved management and water use efficiencies can be improved on as much as 12,000 acres.
Short Term Effects: This will result in the proper amount of water needed for crop production and soil management during each growing season.
Long Term Effects: This will result in the most efficient use of water possible, dependent on the type of irrigation system being used. As irrigation efficiencies improve, the aquifer should respond with a rising water level or a reduced rate of decline.

8. Conservation Crop Rotation: This involves growing crops in a recurring sequence on the same field. A combination of high residue and low residue crops will be rotated to compliment each other in applying residue back to the soil, protecting the soil from wind erosion during critical periods, and increasing the carbon sequestration cycle. An estimated 8,000 acres could be addressed with this practice.
Short Term Effects: Not significant
Long Term Effects: Practice will ensure that the soil is protected and the nutrient and organic levels are sustained throughout the rotation period.

9. Residue Management (Mulch Till): This involves managing the amount, orientation, and distribution of crop and other plant residues on the soil surface year-round, while growing crops where the entire field surface is tilled prior to planting. An estimated 1000 to 1500 acres could be applied through the GPA program.
Short Term Effects: None
Long Term Effects: Wind erosion will be reduced, soil organic matter will be maintained or increased, and soil tilth will be improved.

10. Residue Management (Seasonal): This involves managing the amount, orientation, and distribution of crop and other plant residues on the soil surface during part of the year, while growing crops in a clean tilled seedbed. An estimated 5000 acres could be applied.
Short Term Effects: None
Long Term Effects: Wind erosion will be reduced and soil tilth may improve somewhat.

11. Nutrient Management: This involves managing the amount, form, placement, and timing of applications of plant nutrients. An estimated 5000 acres will be applied.
Short Term Effects: This will improve crop production while preventing the excess application of plant nutrients as soon as practice component is implemented.
Long Term Effects: The potential for build up of excess plant nutrients in the soils will be reduced. This will also reduce the potential for ground water pollution due to nutrient

leaching, and surface water pollution due to potential wind erosion and subsequent sedimentation or runoff into downstream waters.

12. Pest Management: This involves managing agricultural pest infestations (including weeds, insects, and diseases) to reduce adverse effects on plant growth, crop production, and environmental resources. Pesticides would be applied according to crop needs, field conditions, and label requirements. An estimated 8000 acres will be applied.
Short Term Effects: This will improve crop production while preventing the excess application of pesticides.
Long Term Effects: The potential for build up of excess pesticides in the environment will be reduced. This will also reduce the potential for ground water pollution due to pesticide use.

13. Conservation Buffers: This involves planting strips of vegetation at specified locations to provide protection from wind erosion and its effect on crops. Included are crosswind trap strips, herbaceous wind barriers, and field windbreaks. These are cover that is planted in rows or strips across the prevailing wind direction and are designed to reduce soil erosion, induce soil deposition, protect growing crops, and provide wildlife with food and cover. The primary differences are the type and height of vegetation. An estimated 15,000 linear feet could be planted.
Short Term Effects: None
Long Term Effects: Reduced damage from wind erosion and provide wildlife habitat diversity.

14. Upland Wildlife Habitat Management: This will consist of providing additional cover and roosting habitat. Species such as Gambel's and scaled quail, mourning and white wing doves, and various raptors and neotropical migratory birds will benefit. This will be primarily accomplished with the planting of conservation buffers and small grain plots in corners and boundaries of fields. This practice would be accomplished on separate acres managed for the listed wildlife. An estimated 300 acres could be planted for this purpose.
Short Term Effects: None
Long Term Effects: Increased populations of the target species as well as survivability of the young of the species nesting in the GPA should be observed.

15. Surface Roughening: This component consists of chiseling a field to create a rough surface that is more resistant to wind erosion. Soil will be more cloddy and angular to cause quicker deposition of soil particles on-site. An estimated 8,000 acres could be applied.
Short Term Effects: Immediate positive impact of soil retention and moisture retention on-site.
Long Term Effect: Reduction of soil loss during critical periods of soil susceptibility to erosion.

DISCUSSION OF IMPACTS AND EFFECTS OF ALTERNATIVE NO. 2:

With the application of conservation systems through the GPA program, application efficiencies can be improved by 40 to 45 % and average estimated water saving of two (2) acre-feet per acre per year on approximately 12,000 acres in the GPA could be achieved. Correspondingly, less water will be diverted from the Gila River by the irrigation company or pumped out of closed basin aquifers for irrigation and could be used for other purposes, including protection of the spikedace and loach minnow, and the southwestern willow flycatcher. These allocations are beyond the authority of NRCS.

Land uses will not change as a result of implementing this alternative. Cash flows may increase for individuals, but investment requirements will increase with improvements. This alternative should reduce labor requirements. Management knowledge and ability will need to increase. Risk of investment loss is moderate and profitability may remain static. Overall, client and community well being will be improved because more water has become available over a long-term basis.

Table 1, Alternative 2.

Practice	Treatment with NRCS EQIP Assistance Alone	Treatment by Landowner Initiative, Other Agency Assistance and NRCS Cumulatively
Irrigation Pipeline	15,000 linear feet	18,000 linear feet
Concrete-lined Ditch	20,000 linear feet	22,000 linear feet
Irrigation Land Leveling	5,000 acres	6,500 acres
Trickle Irrigation System	10 systems	13 systems
LEPA Sprinkler System	4 systems	5 systems
Irrigation Water Management	12,000 acres	14,000 acres
Conservation Crop Rotation	8,000 acres	10,000 acres
Residue Management	6,000 acres	7,000 acres
Nutrient Management	5,000 acres	6,500 acres
Pest Management	8,000 acres	10,000 acres
Conservation Buffers	15,000 linear feet	18,000 linear feet
Upland Wildlife Habitat	300 acres	350 acres
Surface Roughening	8,000 acres	11,000 acres

Some irrigated prime farmland may be involved in this program. Unique farmland will be maintained and improved to sustain continued use.

Table 2.

Comparison of Alternatives Effects on Needs					
Alternative	Irrigation Efficiency (%)	Water Use (in/ac)	Water Saved (in/ac)	Program Cost ($/ac)	Total Cost ($/ac)
1 No Action	40	61.25 avg	0	0	0
2 Proposed Action	85	28.80 avg	32.45 avg	$300 avg	$600 avg

PERSONS AND AGENCIES CONSULTED:

Hidalgo Soil and Water Conservation District Board
405 Duncan Hwy
Lordsburg, NM

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Las Cruces, NM

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Joy Nicolopolous and Marilyn Myers
USFWS, Div. of Endangered Species & Habitat Conservation
Albuquerque, NM

Elmer Veeder, District Conservationist
USDA-Natural Resource Conservation Service
Deming, NM

REFERENCES:

NRCS Field Office Technical Guide, Section III, Quality Criteria.

NRCS Field Office Technical Guide, Section IV, Standards and Specifications.

NRCS New Mexico Engineering Handbook, Irrigation Guide.

NM Game and Fish Department, Biota Information System (BISON), http://151.199.74.229/states/nm.htm

US Fish and Wildlife Service, Endangered Species Program, http://endangered.fws.gov/

FINDING OF NO SIGNIFICANT IMPACT
For the Implementation of EQIP in the
Hidalgo County GPA

Introduction

The Hidalgo County GPA is a federally assisted action under the Environmental Quality Incentives Program (EQIP), with assistance from the Natural Resources Conservation Service (NRCS). An environmental assessment was undertaken in connection with the development of this proposed action. This assessment was conducted in consultation with Local, State, and Federal agencies. Data developed during the assessment is available, upon request, from:

U.S. Department of Agriculture
Natural Resources Conservation Service
Lordsburg Field Office
Lordsburg, NM 88045

The Environmental Assessment (EA) is attached for reference.

DETERMINATION OF SIGNIFICANCE

Table 1. Determination of Significance of Proposed Action.

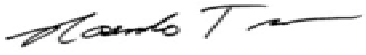
CONTEXT	INTENSITY	REASONS FOR NON-SIGNIFICANCE
Water Saved – 2 ac.ft./ac. saved by agriculture.	Permanent water savings each Year.	Water saved may only be noticeable in dry years. Allocation is beyond control of NRCS.
Public Health and Safety (Air Quality) – Disturb 10% of agricultural area.	Temporary dust during construction, scattered over Time and location.	Rural character of area precludes air quality problems at any one place or any one time.
Cumulative Impacts – 28% Of agricultural area will be affected.	Increased irrigation efficiency and nutrient reductions on treated acres will continue for life of practices and management is permanent.	Actions by all other sources are only 2-3% more than NRCS alone.

Other considerations related to context and intensity are discussed as follows: Farms are similar in the county and are not unique compared to other irrigated farms in the southern half of the state. No issues or concerns have been expressed at any public meetings, so controversy is small. Results of actions are known from past experience in the area, thus

uncertainty and risk is low to moderate. Precedent for future action will be limited because nearly all farmers interested in this proposal are planning to participate. There will be no impact to National Register of Historic Places or cultural resources because each undertaking will have a cultural survey and record search completed before any action is started, and mitigation will occur as needed. Most practices will have no effect on endangered species. Practices that may effect a species will require a consultation with the US FWS. No national, state, local or tribal laws will be violated by this action.

Finding of No Significant Impact:

This finding is based on evidence presented in the environmental assessment of impacts and alternatives for this geographic priority area. Based on the assessment and the reasons given above, I find that the proposed alternative analyzed in the EA will have no significant impact on the quality of the human environment. Therefore, an environmental impact statement will not be prepared.



ROSENDO TREVINO
State Conservationist

December 20, 2001
Date